The NASA
LangleyEdge
NASA Langley Research Center

NASA Langley Research Center is actively seeking partnerships and collaborations to commercialize its Carbon Nanotube (CNT) Based Imaging and Sensing Device technologies.

The Market Opportunities

- Carbon nanotube based imaging technology coupled with near field microscopy serves as a powerful tool for medical imaging and biological and immunological sciences
- Nondestructive evaluation devices
- Advanced imaging and high-resolution displays
- Optical switching devices
- Ultra-sensitive, dense array image sensors
- Integration/embedment into advanced airfoil concepts for airframers

The Benefits

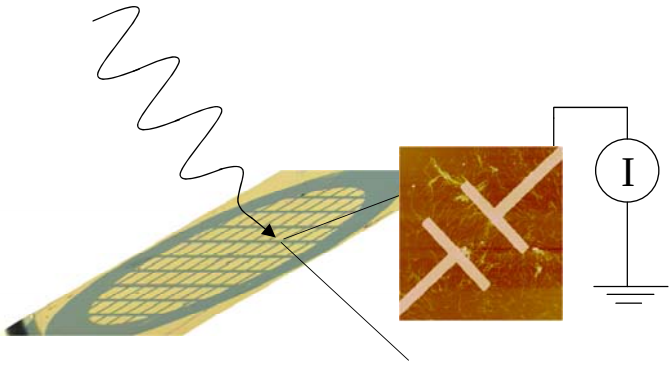
- Enables nanoscopic imaging and sensing devices of low weight, high information density, low power consumption, and high bandwidth
- Provides optical imaging and sensing devices that address individual pixel elements with extremely high bandwidth
- Provides unparalleled spatial resolution up to the diffraction limit of optical systems
- Overcomes limitations of state-of-the-art CCD cameras
- Enables development of next-generation imaging and sensing devices

The Technology

This innovation enables the development of next generation imaging and sensing devices exhibiting unparalleled spatial resolution, high sensitivity, and high bandwidth. The device exploits photogenerated electron transport through CNT arrays that are well-aligned on a patterned electrode array.

Carbon Nanotube Based Imaging and Sensing Devices

Nanoscale photodetector, photoelectric cell and photovoltaic devices



Carbon Nanotube Imaging Sensor Concept

One embodiment comprises a photoactive material deposited onto a single CNT. Light energy incident on the photoactive material generates the release of photogenerated electrons that are transported through the CNT to a supporting electrode. The resulting current scales with the incident light intensity producing an individually addressable photoelement. An array of these elements placed on a micron-sized electrode with an appropriate lens system would enable a means of focusing and monitoring an image in real-time. Current in each of the photoelements would be read continuously and assigned to a matrix element that corresponds to the image.

Additional Information

To discuss in detail how this technology can profit you and your business, please contact:

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LAR-16279-1,-2: U.S. Pat. Nos. 6,750,438; 6,765,190
LAR-16573-1: Patent Application Pending